

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#5

Applicants:	)	I hereby certify that this paper
	)	is being deposited with the
TIE LAN, ET AL.	)	United States Postal Service
	)	with sufficient postage as first
Serial No.: 09/870,239	)	class mail in an envelope
	)	addressed to: Commissioner
Filed: May 30, 2001	)	for Patents, Washington, D.C.
	)	20231 on this date:
For:)	
INTERCALATES AND EXFOLIATES	)	October 18, 2001
THEREOF HAVING AN IMPROVED)	
LEVEL OF EXTRACTABLE MATERIAL	)	<u>Richard H. Anderson</u>
)	
Attorney Docket No.: 28682/71114	)	Richard H. Anderson
	)	Registration No. 26,526
Group Art Unit: Unknown	)	Attorney for Applicants
)	
Examiner: Unknown)	

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

The patents and/or publications listed on the enclosed PTO Form-1449 are submitted pursuant to 37 CFR §§ 1.56, 1.97, and 1.98. Copies of the patents or publications are enclosed as necessary.

TIME OF FILING

This information disclosure statement is being filed:

- ☒ 1. with the application or within three months of the filing date of the application or date of entry into the national stage of an international application or, to the best of the undersigned's knowledge, before the mailing date of a first Office Action on the merits, whichever event occurs last. In accordance with 37 CFR §1.97(b), no certification or fee is required.
- ☐ 2. after the time period specified in paragraph 1 above, but, to the best of the undersigned's knowledge, before the mailing date of a final action under 37 CFR §1.113 or notice of allowance under 37 CFR §1.311. Therefore, in accordance with 37 CFR §1.97(c), submitted herewith is:
- (check either A or B below)
- A. ☐ a certification as specified in 37 CFR §1.97(e).
- B. ☐ the fee set forth in 37 CFR §1.17(p) for submission of an information disclosure statement under 37 CFR §1.97(c).
- ☐ 3. after the mailing date of either a final action under 37 CFR §1.113 or a notice of allowance under 37 CFR §1.311, whichever occurs first, but before payment of the issue fee. Therefore, Applicant submits herewith:
- A. a certification as specified in 37 CFR §1.97(e);
- B. the petition fee set forth in 37 CFR §1.17(i); and
- C. the accompanying petition under 37 CFR §1.97(d).

CERTIFICATION

(only used if No. 2 or No. 3 above is checked)

The person(s) signing below certify

(check appropriate paragraph)

- ☐ that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement. 37 CFR §1.97(e)(1).

OR

- ☐ that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in

37 CFR §1.56(c) more than three months prior to the filing of this statement.
37 CFR §1.97(e)(2).

PETITION

(only used if No. 3 above is checked)

☐ Applicant(s) hereby petition(s) pursuant to 37 C.F.R. § 1.97(d) that this Information Disclosure Statement, Form PTO-1449, and document(s) identified therein be considered.

PRIOR AND RELATED APPLICATIONS

In accordance with 37 CFR §1.98(d), copies of the patents and publications listed on the enclosed PTO Form-1449 are not provided because the patents and publications were previously cited by, or submitted to, the Patent Office in a prior application that Applicant(s) rely upon for an earlier filing date under 35 U.S.C. §120. Documents listed on the attached Form PTO-1449 were cited by, or submitted to, the examiner of the following patent application(s):

Applicant(s):
Serial No.
Filing Date:
Title:
Status:

Other applications related to application Serial No. 09/870,239 are:

Applicants: Shriram Bagrodia, et al.
Serial No. 09/870,929
Filing Date: May 30, 2001
Title: "A Polymer Nanocomposite Comprising A Matrix Polymer
And A Layered Clay Material Having An Improved Level
Of Extractable Material"
Status: Pending

METHOD OF PAYMENT

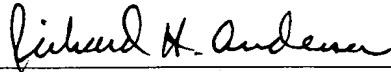
- ☒ No fee is required.
☐ Attached is a check in the amount of \$0.

The Commissioner is authorized to charge any fee deficiency required by this paper, or credit any overpayment, to Deposit Account No. 13-2855. A copy of this paper is enclosed.

Respectfully submitted,

MARSHALL, GERSTEIN & BORUN
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By:



Richard H. Anderson
Reg. No: 26,526

October 18, 2001

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(Use several sheets if necessary)

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TIE LAN, ET AL.

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05/30/01

Group

Unknown

U.S. PATENT DOCUMENTS

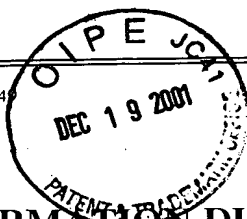
*Examiner Initials		Document #	Issue Date	Name	Class	Subclass	Filing Date If Appropriate
	A1	2,035,546	03/31/36	Hamilton	167	24	
	A2	3,419,460	12/31/68	Ure	161	162	
	A3	3,419,517	12/31/68	Hedrick et al.	260	37	
	A4	3,515,626	06/02/70	Duffield	161	162	
	A5	3,773,708	11/20/73	Takahashi et al.	260	41 R	
	A6	3,795,650	03/05/74	Burns	260	33.4 R	
	A7	3,843,479	10/22/74	Matsunami et al.	161	165	
	A8	3,912,532	10/14/75	Simone	106	308 N	
	A9	3,929,678	12/30/75	Laughlin et al.	252	526	
	A10	3,929,849	12/30/75	Oswald	260	448	
	A11	3,946,089	03/23/76	Furukawa et al.	260	857 PG	
	A12	4,053,493	10/11/77	Oswald	260	448	
	A13	4,125,411	11/14/78	Lyons	106	291	
	A14	4,133,802	01/09/79	Hachiboshi et al.	528	502	
	A15	4,136,103	01/23/79	Oswald	260	448	
	A16	4,210,572	07/01/80	Herman et al.	260	40 4	
	A17	4,251,576	02/17/81	Osborn et al.	428	331	
	A18	4,400,485	08/23/83	Mukamal et al.	524	444	
	A19	4,431,755	02/14/84	Weber et al.	523	203	
	A20	4,434,075	02/28/84	Mardis et al.	252	315.2	

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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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*Examiner Initials		Document #	Issue Date	Name	Class	Subclass	Filing Date If Appropriate
	A21	4,472,538	09/18/84	Kamigaito et al.	523	202	
	A22	4,500,670	02/19/85	McKinley et al.	524	445	
	A23	4,546,126	10/08/85	Breitenfellner et al.	523	216	
	A24	4,546,145	10/08/85	Kishida et al.	524	780	
	A25	4,600,744	07/15/86	Libor et al.	524	446	
	A26	4,613,542	09/23/86	Alexander	428	290	
	A27	4,624,982	11/25/86	Alexander	524	446	
	A28	4,676,929	06/30/87	Rittler	252	315.2	
	A29	4,739,007	04/19/88	Okada et al.	524	789	
	A30	4,777,206	10/11/88	Rittler	524	445	
	A31	4,789,403	12/06/88	Rice	106	417	
	A32	4,798,766	01/17/89	Rice	428	404	
	A33	4,810,734	03/07/89	Kawasumi et al.	523	216	
	A34	4,842,651	06/27/89	Ravet et al.	106	487	
	A35	4,849,006	07/18/89	Knudson, Jr.	71	64.11	
	A36	4,851,021	07/25/89	Bohrn et al.	65	17	
	A37	4,875,762	10/24/89	Kato et al.	350	357	
	A38	4,889,885	12/26/89	Usuki et al.	524	443	
	A39	4,894,411	01/16/90	Okada et al.	524	710	
	A40	4,920,171	04/24/90	Hutton, Jr. et al.	524	446	

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	A41	4,956,121	09/11/90	Tymon et al.	252	378 R	
	A42	5,028,351	07/02/91	Kato et al.	252	315.2	
	A43	5,032,546	07/16/91	Giannelis et al.	501	3	
	A44	5,032,547	07/16/91	Giannelis et al.	501	3	
	A45	5,091,462	02/25/92	Fukui et al.	524	504	
	A46	5,102,948	04/07/92	Deguchi et al.	524	789	
	A47	5,164,440	11/17/92	Deguchi et al.	524	444	
	A48	5,164,460	11/17/92	Yano et al.	624	445	
	A49	5,204,078	04/20/93	Tateyama et al.	423	331	
	A50	5,206,284	04/27/93	Fukui et al.	524	504	
	A51	5,229,451	07/20/93	Carter et al.	524	493	
	A52	5,248,720	09/28/93	Deguchi et al.	524	444	
	A53	5,326,500	07/05/94	Friedman et al.	252	378	
	A54	5,340,558	08/23/94	Friedman et al.	423	328.1	
	A55	5,385,776	01/31/95	Maxfield et al.	428	297	
	A56	5,391,437	02/21/95	Miyasaka et al.	528	425.5	
	A57	5,414,042	05/09/95	Yasue et al.	524	789	
	A58	5,428,094	06/27/95	Tokoh et al.	524	379	
	A59	5,506,046	04/09/96	Andersen et al.	524	446	
	A60	5,508,072	04/16/96	Andersen et al.	524	446	

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Forth PTO-1449  INFORMATION DISCLOSURE STATEMENT <i>(Use several sheets if necessary)</i>	U.S. Department of Commerce Patent and Trademark Office		Atty. Docket No. 28682/71114	Serial No. 09/870,239
	Applicant TIE LAN, ET AL.			
	Filing Date 05/30/01		Group Unknown	

U.S. PATENT DOCUMENTS							
*Examiner Initials		Document #	Issue Date	Name	Class	Subclass	Filing Date If Appropriate
	A61	5,514,734	05/07/96	Maxfield et al.	523	204	
	A62	5,552,469	09/03/96	Beall et al.	524	445	
	A63	5,554,670	09/10/96	Giannelis et al.	523	209	
	A64	5,578,672	11/26/96	Beall et al.	624	446	
	A65	5,659,034	08/19/97	Debord et al.	546	2	
	A66	5,667,886	09/16/97	Gough et al.	428	331	
	A67	5,698,624	12/16/97	Beall et al.	524	445	
	A68	5,721,306	02/24/98	Tsipursky et al.	524	449	
	A69	5,730,996	03/24/98	Beall et al.	424	405	
	A70	5,747,403	05/05/98	Boyd et al.	502	62	
	A71	5,747,560	05/05/98	Christiani et al.	523	209	
	A72	5,760,106	06/02/98	Pinnavaia et al.	523	209	
	A73	5,760,121	06/02/98	Beall et al.	524	450	
	A74	5,766,751	06/16/98	Kotani et al.	428	323	
	A75	5,801,216	09/01/98	Pinnavaia et al.	523	209	
	A76	5,804,613	09/08/98	Beall et al.	523	200	
	A77	5,830,528	11/03/98	Beall et al.	427	220	
	A78	5,837,763	11/17/98	Ferraro et al.	524	449	
	A79	5,844,032	12/01/98	Serrano et al.	524	445	
	A80	5,849,830	12/15/98	Tsipursky et al.	524	450	

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*Examiner Initials		Document #	Issue Date	Name	Class	Subclass	Filing Date If Appropriate
	A81	5,853,886	12/29/98	Pinnavaia et al.	428	403	
	A82	5,877,248	03/02/99	Beall et al.	524	450	
	A83	5,880,197	03/09/99	Beall et al.	524	445	
	A84	5,910,523	06/08/99	Hudson	523	213	
	A85	5,952,095	09/14/99	Beall, et al.	428	332	
	A86	5,955,094	09/21/99	Beall et al.	424	405	
	A87	5,981,029	11/09/99	Harada et al.	428	143	
	A88	5,994,445	11/30/99	Kaschel et al.	524	444	
	A89	5,998,528	12/07/99	Tsipursky et al.	524	445	
	A90	6,034,163	03/07/00	Barbee et al.	524	445	
	A91	6,050,509	04/18/00	Clarey et al.	241	21	
	A92	6,057,396	05/02/00	Lan et al.	524	445	
	A93	6,071,988	06/06/00	Barbee et al.	523	210	
	A94	6,083,559	07/04/00	Beall et al.	427	220	
	A95	6,084,019	07/04/00	Matayabas, Jr. et al.	524	445	
	A96	6,090,734	07/18/00	Tsipursky et al.	501	141	
	A97	6,124,365	09/26/00	Lan et al.	516	101	
	A98	6,126,734	10/03/00	Beall et al.	106	487	
	A99	6,225,394	05/01/01	Lan et al.	524	445	
	A100	6,228,903	05/08/01	Beall et al.	523	209	

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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

*Examiner Initials		Document #	Publication Date	Country	Class	Subclass	Translation	
							Yes	No
	B1	1 146 668 ✓	26.03.69	UK				
	B2	DT 1 642 122 ✓	30.07.70	Germany			X	
	B3	1 565 362 ✓	16.04.80	Great Britain				
	B4	0 205 281 A3 ✓	17.12.86	EPO				
	B5	0 335 653 A1 ✓	04.10.89	EPO				
	B6	0 358 415 A1 ✓	14.03.90	EPO				
	B7	0 479 031 A1 ✓	08.04.92	EPO				
	B8	WO 93/04117 ✓	04.03.93	WIPO				
	B9	WO 93/04118 ✓	04.03.93	WIPO				
	B10	WO 93/11190 ✓	10.06.93	WIPO				
	B11	EP 0 548 940 A1 ✓	30.06.93	EPO				
	B12	EP 0 645 181 A2 ✓	29.03.95	EPO				
	B13	EP 0 761 739 A1 ✓	12.03.97	EPO				
	B14	DD 281 585 A5 ✓	15.08.90	Germany			X	
	B15	EP 0 780 340 A1 ✓	25.06.97	EPO				
	B16	EP 0 619 182 A1 ✓	12.10.94	EPO				
	B17	GB 2 088 932 A ✓	16.06.82	UK				
	B18	EP 0 747 451 A2 ✓	11.12.96	EPO				
	B19	WO 96/08526 ✓	21.03.96	WIPO				
	B20	WO 98/01346 ✓	15.01.98	WIPO				

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

C1✓	C. W. Francis, "Adsorption of Polyvinylpyrrolidone on Reference Clay Minerals", Soil Science, Vol. 115, No. 1, 1973, pp. 40-54
C2✓	A. Usuki, et al., "Synthesis of nylon 6-clay hybrid", J. Mater. Res., Vol. 8, No. 5, May 1993, pp. 1179-1184
C3✓	Y. Kojima, et al., "Mechanical Properties Of Nylon 6-Clay Hybrid", J. Mater. Res., Vol. 8, No. 5, May 1993, pp. 1185-1189
C4✓	K. Suzuki, et al., "Preparation Of Delaminated Clay Having A Narrow Micropore Distribution In The Presence Of Hydroxyaluminum Cations And Polyvinyl Alcohol", Clays and Clay Minerals, Vol. 36, No. 2, 1988, pp. 147-152
C5✓	R. Levy, et al., "Interlayer Adsorption of Polyvinylpyrrolidone On Montmorillonite", Journal of Colloid and Interface Science, Vol. 50, No. 3, March 1975, pp. 442-450
C6✓	D.J. Greenland, "Adsorption Of Polyvinyl Alcohols By Montmorillonite", Journal of Colloid Science, 18, (1963) pp. 647-664
C7✓	R.A. Vaia, et al., "Synthesis and Properties of Two-Dimensional Nanostructures by Direct Intercalation of Polymer Melts in Layered Silicates", Chem. Mater. 1993, 5, pp. 1694-1696
C8✓	R.A. Vaia, et al., "New Polymer Electrolyte Nanocomposites: Melt Intercalation of Poly(ethylene oxide) in Mica-Type Silicates", Advanced Materials 1995, 7, No. 2, pp. 154-156
C9✓	A. Akelah, et al., "Synthesis and Characterization of Epoxyphilic montmorillonites", Clay Minerals (1994) 29, pp. 169-178
C10✓	C.E. Clapp, et al., "Adsorption Studies Of A Dextran On Montmorillonite", Trans. 9th Int. Cong. Soil Sci., 1968, Vol. 1, pp. 627-634
C11✓	H.G.G. Dekking, "Preparation And Properties Of Some Polymer-Clay Compounds", Clays and Clay Minerals, 1964, 12, pp. 603-616
C12✓	A. Usuki, et al., "Characterization and Properties of Nylon 6 - Clay Hybrid", (source and date unknown), pp. 651-652
C13✓	G.W. Brindley, et al., "Preparation And Solvation Properties Of Some Variable Charge Montmorillonites", Clays and Clay Minerals, 1971, Vol. 18, pp. 399-404

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

C14✓	A. Okada, et al., "A Solid State NMR Study On Crystalline Forms Of Nylon 6", Journal of Applied Polymer Science, (1989), Vol. 37, pp. 1363-1371
C15✓	A. Usuki, et al., "Swelling Behavior Of Montmorillonite Cation Exchanged For ω -Amino Acids By ϵ -Caprolactam, J. Mater. Res., Vol. 8, No. 5, May 1993, pp. 1174-1178
C16✓	Y. Kojima, et al., "One-Pot Synthesis Of Nylon 6-Clay Hybrid", Journal of Polymer Science: Part A: Polymer Chemistry, Vol. 31, (1993), pp. 1755-1758
C17✓	Y. Kojima, et al., "Fine Structure Of Nylon-6-Clay Hybrid", Journal of Polymer Science: Part B: Polymer Physics, Vol. 32 (1994), pp. 625-630
C18✓	B.K.G. Theng, "Clay-Polymer interactions: SumGomary And Perspectives", Clays and Clay Minerals, Vol. 30, No. 1 (1982) pp. 1-9
C19✓	Sugahara, et al., "Clay-Organic Nano-Composite; Preparation of a Kaolinite-Poly(vinylpyrrolidone) Intercalation Compound", <i>Journal of the Ceramic Society of Japan</i> , International Edition, Vol. 100, No. 4, April 1, 1992, pp. 420-423
C20✓	Ogawa, et al., "Preparation Of Montmorillonite-Polyacrylamide Intercalation Compounds And The Water Absorbing Property", <i>Clay Science</i> , Vol. 7, 1989 Tokyo, Japan, pp. 243-251
C21✓	Wu, et al., "Structural, thermal, and electrical characterization of layered nanocomposites derived from sodium-montmorillonite and polyethers", <i>Chemical Abstracts</i> , Vol. 119, No. 4, July 26, 1993 Columbus, Ohio, US, Abstract No. 31017r
C22✓	Bujdak, et al., "The reaction of montmorillonite with octadecylamine in solid and melted state", <i>Chemical Abstracts</i> , Vol. 118, No. 26, Abstract No. 257609b, page 166 (28 June 1993), Columbus, Ohio (US)
C23	Yano, et al., "Synthesis And Properties Of Polyimide-Clay Hybrid", <i>Polymer Preprints, ACS</i> , April 1991, pages 65-66
C24✓	Giannelis, et al., "Synthesis And Processing Of Ceramics: Scientific Issues", <i>Materials Research Society Symposium Proceedings</i> , Volume 249 (1992), pages 547-558

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